

از دهم

مسئله

$$f(x) + g(x) = \sqrt{x-f} + \sqrt{x-e}$$

$$= \sqrt{(\sqrt{x-e} + f)^2} + \sqrt{(\sqrt{x-e} - f)^2} = \sqrt{x-f} + f + \sqrt{x-e}$$

$$= 2\sqrt{x-f} \Rightarrow a + b\sqrt{ace}$$

$$\frac{a+b}{c} = \frac{-1}{f}$$

$$a=0, b=f, c=-f$$

$$f(x) = \frac{(x+f)}{(x-f)(x-1)} \rightarrow D_f = \mathbb{R} - \{1, f\}$$

$$\frac{g}{f} = \left\{ \left(\frac{1}{f}, \frac{1}{f} \right), (1, 1) \right\}$$

$$g(x) + f(x) = \left\{ \left(\frac{1}{f}, \frac{1}{f} \right), \left(\frac{1}{f}, -1 \right), (1, 1), \left(-\frac{1}{f}, 1 \right) \right\}$$

$$\rightarrow f(x) = \left\{ (-1, 1), (1, 1), (\sqrt{f}, -1), (-\sqrt{f}, -1), (f, 1), (-f, 1) \right\}$$

$$2) f g^2(x) + 1 = \left\{ (-2, 1), (1, f), (f, 1), (-1, 1) \right\}$$

$$3) \frac{f^2}{g} = \left\{ (1, -f), (f, -1) \right\}$$

$$h = Y^2 + g \rightarrow \{(Y, \omega), (1, \omega), (-Y, 4)\}$$

$$f(n) = \frac{\sqrt{\sqrt{11n} - n}}{n - r}, \quad g(n) = [n] + [-n]$$

$$D_g = \mathbb{N}$$

$$r \neq r, \quad u \geq 0, \quad \sqrt{11n} - n \geq 0$$

$$n \leq r$$

$$n(n - r) \leq \frac{r^2}{4}$$

$$D_f = [0, r] - \{r\}$$

$$\left(\frac{f}{g+1}\right)(n) \rightarrow g \neq -1 \rightarrow D_g = \mathbb{Z}$$

$$D \frac{f}{g+1} = D_f \cap D_g = ([0, r] - \{r\}) \cap \mathbb{Z} = \{0, 1, r\}$$

$$f(n) = \sqrt{-(n^2 - \omega n + \epsilon)} = \sqrt{\frac{-(n-\epsilon)(n-\omega)}{(2-n)(2-1)}} = \frac{1}{-1} \frac{r}{-1}$$

$$D_f = [1, f]$$

$$\bigcap D \frac{f(n)}{g(n)} = \{1, r, f\}$$

$$D_g = \{1, r, \epsilon, \omega\}$$

$$h = \frac{f(n)}{g(n)} = \{(1, 0), (Y, \sqrt{\frac{r}{1}}), (2, 0)\}$$

الف) $y = n^3 - 3n^2 + 3n - 1 + 1$

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بدراسة (n-1) كالتالي

$$n^3 - 3n^2 + 3n - 1 = (n-1)^3$$

$$y = (n-1)^3 + 1$$

$$\begin{aligned} & -3n^2 + 3n \\ & + 3n^2 - 3n \\ & \hline & n-1 \end{aligned}$$

$$n = \sqrt[3]{y-1} + 1$$

$$D_y = \mathbb{R}$$

$$R_f = \mathbb{R}$$

ب) $y = \frac{1}{n^2 - 2n} \rightarrow \frac{1}{y} = n^2 - 2n + 1 - 1 = (n-1)^2 - 1 = \frac{1}{y}$

$$\frac{1+y}{y} \geq 0 \rightarrow \frac{-1}{y} \leq 0 \rightarrow n = \sqrt{\frac{1+y}{y}} + 1$$

$$R_f = \mathbb{R} - (-1; 0]$$

الف) $y = n^2 - 8n + 16 \rightarrow \frac{n}{y} = \frac{-b}{2a} = 2$

(1)

min

$$y = 16 - 16 + 16 = 16$$

$$R_f = [16; +\infty)$$

ب) $y = -n^2 + 4n + 3 \rightarrow \frac{n}{y} = \frac{-b}{2a} = 2$

max

$$y = 13$$

$$R_f = (-\infty; 13]$$

$$2) y = \sqrt{n^2 - 2n - 3} \rightarrow y^2 = n^2 - 2n - 3 \rightarrow y^2 + 2n + 3 = n^2$$

$$y^2 = (n-1)^2 - 4 \rightarrow \sqrt{y^2 + 4} + 1 = n$$

$$y^2 + 4 \geq 0$$

$$y \in [-2, 2]$$

$$3) y = \sqrt{4n - n^2} \rightarrow y^2 = -n^2 + 4n$$

$$\rightarrow n^2 - 4n = -y^2$$

$$n^2 - 4n + 4 = -y^2 + 4$$

$$(n-2)^2 - 4 = -y^2$$

$$4 - y^2 \geq 0 \rightarrow -2 \leq y \leq 2$$

$$n = \sqrt{4 - y^2} + 2$$

$$R = [-2, 2]$$

$$4) y = n^2 - 2n^2 + 2n + 1 \rightarrow R_y = [1, 2]$$

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$$5) y = n^2 - 4n^2 + 2n + 2 \rightarrow R_y = [1, 2]$$

$$6) y = \sqrt{n^2 - 4n^2 + 2n + 1} \rightarrow R_y = [0, +\infty)$$

$$7) y = (n^2 - 2n^2 + 2n + 1)^2 \rightarrow R_y = [0, +\infty)$$

DATE / / SUBJECT:

$$\text{الف) } y = \frac{n+1}{n-p} \quad R_p = 1R - \{r\}$$

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$$\text{ل. 1) } y = \frac{n+1}{n+1} \quad R_p = 1R - \{r\}$$